BREEDPLAN Tips

# ***Why Should You Record With BREEDPLAN***

Why should seedstock producers performance record their animals with BREEDPLAN? In answering this question, we firstly need to discuss some general concepts regarding genetics.

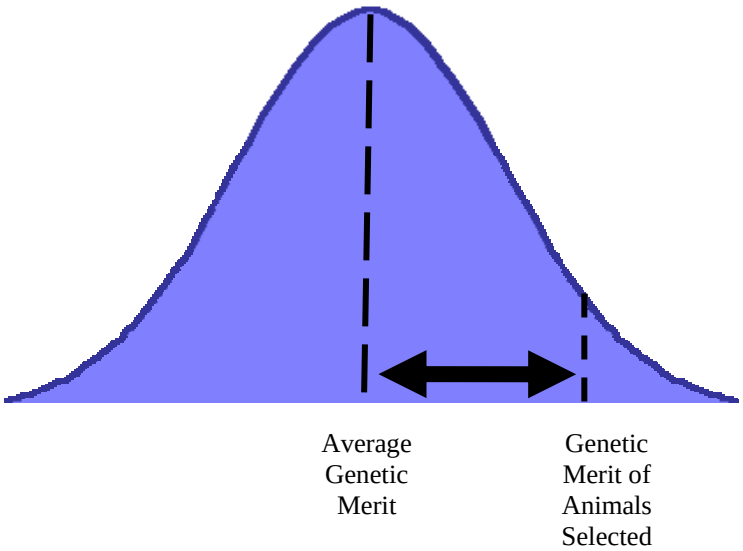
## Making Genetic Improvement

The primary objective of the seedstock producer should be to make genetic improvement. Genetic improvement occurs when the average genetic value of the offspring (eg. the current calves) is higher than the average genetic value of the previous generation from which the parents were selected. In other words, the calves that are produced are superior to their parents. Genetic improvement can be made for either an individual trait or across a range of traits. Leading seedstock producers will be concentrating on making genetic improvement for a large range of traits simultaneously, with the relative importance given to each trait determined by the influence that the trait has on the profitability of the beef enterprise.

Several key factors influence the rate of genetic improvement that is made in a seedstock herd. Seedstock breeders need to appreciate how these factors interact in the dynamics of their breeding herd to ensure that long term sustainable genetic progress is achieved. The factors that determine the rate of genetic improvement that is achieved are defined in countless different formulas within the different genetic textbooks that are available. Undoubtedly however, these factors focus on two key areas.

The first and most important area influencing the rate of genetic improvement that is achieved relates to the genetic superiority of the animals that were selected to become parents. The higher the genetic merit of the animals selected to become parents relative to the animals that were available for selection, the higher the genetic improvement that can be achieved. In simple terms, the greater the genetic superiority of the parents, the greater the genetic improvement that will be achieved. This is often referred to as "selection intensity" or the "selection differential".

*One of the key factors influencing the amount of genetic improvement that is achieved is how genetically superior the animals are that are selected for inclusion in the breeding program.*



The second key area influencing the rate of genetic improvement relates to the average age of the animals that are selected to become parents. If genetic improvement is being achieved in the herd, the younger the age of the parents that are used, the greater the genetic improvement that will be achieved. This is a result of the younger animals being of higher genetic merit than the older animals in the herd. This is often referred to as "generation length", with a shorter generation length being associated with greater genetic improvement.

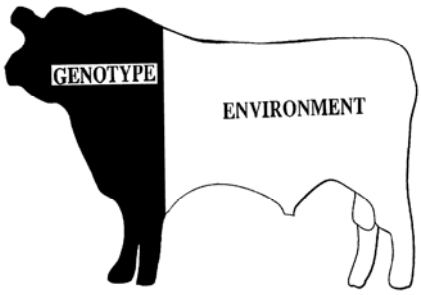
## Selecting Animals for Use in a Breeding Program

Given the relationship between the genetic superiority of the animals that are selected to become parents and the rate of genetic improvement that is achieved, it is imperative that the most genetically superior animals available are selected for use within a breeding program. So how do we identify which animals are genetically superior? If we are selecting a bull to join from a mob of yearling bulls, how do we ensure that the bull we select will be the one with the best genetic package so that the subsequent genetic improvement is maximised?

The first complication that can cause difficulty when trying to select the most genetically superior animal is the fact that it is challenging to "see" many of the traits that influence the profitability of a beef enterprise. For example, it is hard to tell what level of marbling a bull's progeny will have or how fertile his female daughters will be compared to another bull simply by assessing them visually. In reality, for a lot of the important traits, visual selection only allows us to select animals on what we think is there.

*It can be challenging to "see" many of the traits that influence the profitability of a beef enterprise when selecting animals for use within a breeding program.*

The challenge of not being able to "see" many of the important traits can be overcome somewhat by objectively measuring the performance animals (eg. using an ultrasound scanning machine to measure the amount of marbling a bull possesses), however the second complication that needs to be considered when selecting animals for use within a breeding program is that the performance of an animal is influenced by not only its genetic merit but also a raft of non genetic factors. These include things like nutrition, disease status and age just to name a few. The implication of this is "what you see is not necessarily what you get" and so it is imperative that selection decisions are based on the genetic differences between animals if genetic improvement is to be achieved.




*What you see is not necessarily what you get. Selection decisions can be compromised by selection on differences between animals that are due to non genetic factors.*

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The influence of non genetic factors on the performance of an animal limits our ability to select animals simply by assessing them either visually or by using objective raw performance measurements in isolation. While astute cattleman may be able to adjust for differences in some of the non genetic effects such as nutrition and age, there are still other non genetic effects that can not be accounted for that will cloud any selection decision. Research has demonstrated that even when all the known non genetic differences between animals are accounted for, only a relatively small proportion of the remaining differences in performance between animals are passed on to the progeny of these animals. For the technically minded, the proportion of the difference that is observed in the progeny is referred to as the "heritability" and varies from trait to trait.

So how do we get around these complications to ensure that the animal we select will be the one the best genetic package? Remember, we are not trying to select the animal with the best performance, but rather the animal whose progeny will perform the best. This is where tools like BREEDPLAN can be used to assist with our selection decisions.

## Using BREEDPLAN to Assist Animal Selection

BREEDPLAN is a genetic evaluation program that compares animals on the basis of their value as parents, that is, their breeding value.

The BREEDPLAN genetic evaluation is run by the Agricultural Business Research Institute (ABRI) at the University of New England in Armidale and operates through a Board of Management which has representation from industry and technical organisations, as well as producer members. BREEDPLAN research and development is carried out by the Animal Genetics and Breeding Unit (AGBU), also at the University of New England.

BREEDPLAN is all about increasing accuracy of selection decisions, and when properly understood and used, can be a significant aid to a cattleman's decision making when selecting animals for use within a breeding program. Look through the jargon and long titles and you will see that BREEDPLAN is an industry based service backed by some of the best expertise in the world.

BREEDPLAN considers all the pedigree and performance information that is available on an animal and its relatives to produce an estimate of an animal's breeding value, that is an "Estimated Breeding Value" (EBV). BREEDPLAN is a similar technology to that which has been used by the pig, poultry and dairy industries to make such dramatic production changes over the last few decades. It has worked wonderfully well for those industries, and works just as well for the genetic evaluation of beef cattle.

*BREEDPLAN is a genetic evaluation program for cattle that provides an estimate of an animal's true breeding value.*

## Benefits of BREEDPLAN

The main benefit offered by BREEDPLAN is its use as a selection tool to assist in the identification of the most genetically superior animals for use within a breeding program from those that are available. As previously discussed, the greater the genetic superiority of the animals that are selected to become parents relative to the animals that were available for selection, the higher the genetic improvement that will be achieved.

Seedstock herds recording with BREEDPLAN receive a sophisticated report for their herd which includes Estimated Breeding Values (EBVs) for their sires, dams, heifer, bull and steer progeny. Amongst other things, this allows effective identification of the animals with the best genetic package, including the ability to identify and select against the normal trait antagonisms. For example increase growth and muscling, while maintaining or increasing fat cover.

Herds recording with BREEDPLAN also receive regular assessments of the change in the genetics of their herd over time relative to their breed, plus access to other genetic tools that assist with animal selection and genetic progress such as BreedObject Selection Indexes, TakeStock, mate selection tools such as Total Genetic Resource Management (TGRM) and Internet Solutions EBV related functions (e.g EBV enquiry or sale catalogues with EBVs displayed).

In addition to its benefit as a tool to increase the rate of genetic improvement through better selection of animals, BREEDPLAN also offers seedstock producers with a valuable marketing tool through the provision of EBVs on sale animals. In a recent survey conducted by a large Breed Society in Southern Australia, 95% of commercial producers indicated that they use EBVs when selecting sale animals, providing a clear indication of the demand for this information.

## Further Information

Hopefully the above discussion provides an answer to the question "Why Should You Record with BREEDPLAN?" Further information, including an outline of what steps need to be followed to start recording with BREEDPLAN, what are the costs of recording with BREEDPLAN and what information needs to be recorded to generate EBVs, is available by contacting staff at BREEDPLAN on (02) 6773 3555. Comprehensive information is also available from the BREEDPLAN website (http://breedplan.une.edu.au).